

MONITORING IMPACTS OF COASTAL HYPOXIA IN THE BAHAMAS



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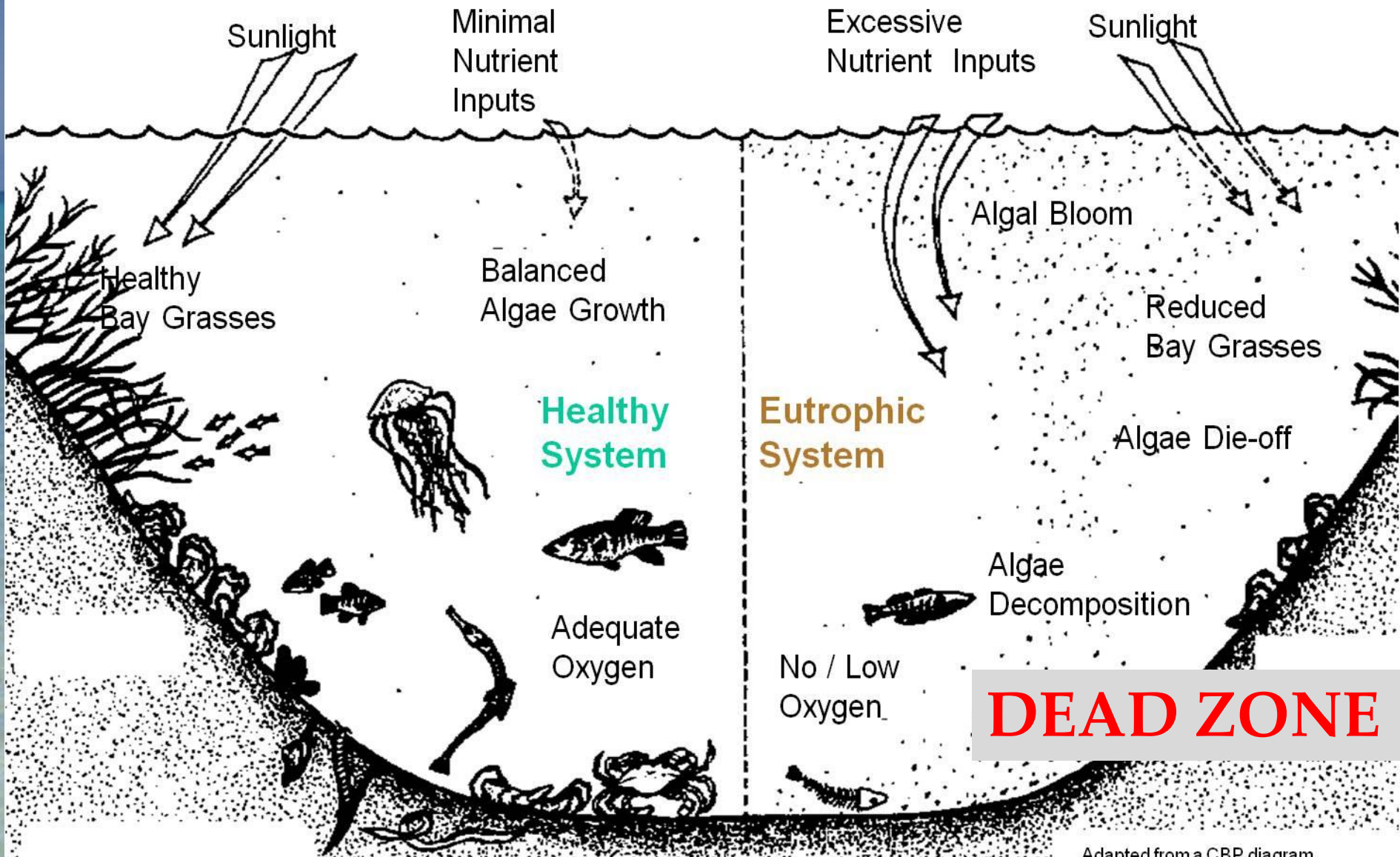


What is Eutrophication and Hypoxia?

Eutrophication (noun) is defined as “increase in the rate of supply of organic matter to an ecosystem” (Nixon 1995).

Hypoxia (noun) is reduced dissolved oxygen content of a body of water detrimental to aerobic organisms. Hypoxic conditions resulting from eutrophication kill fish and other marine life...

The Big Picture

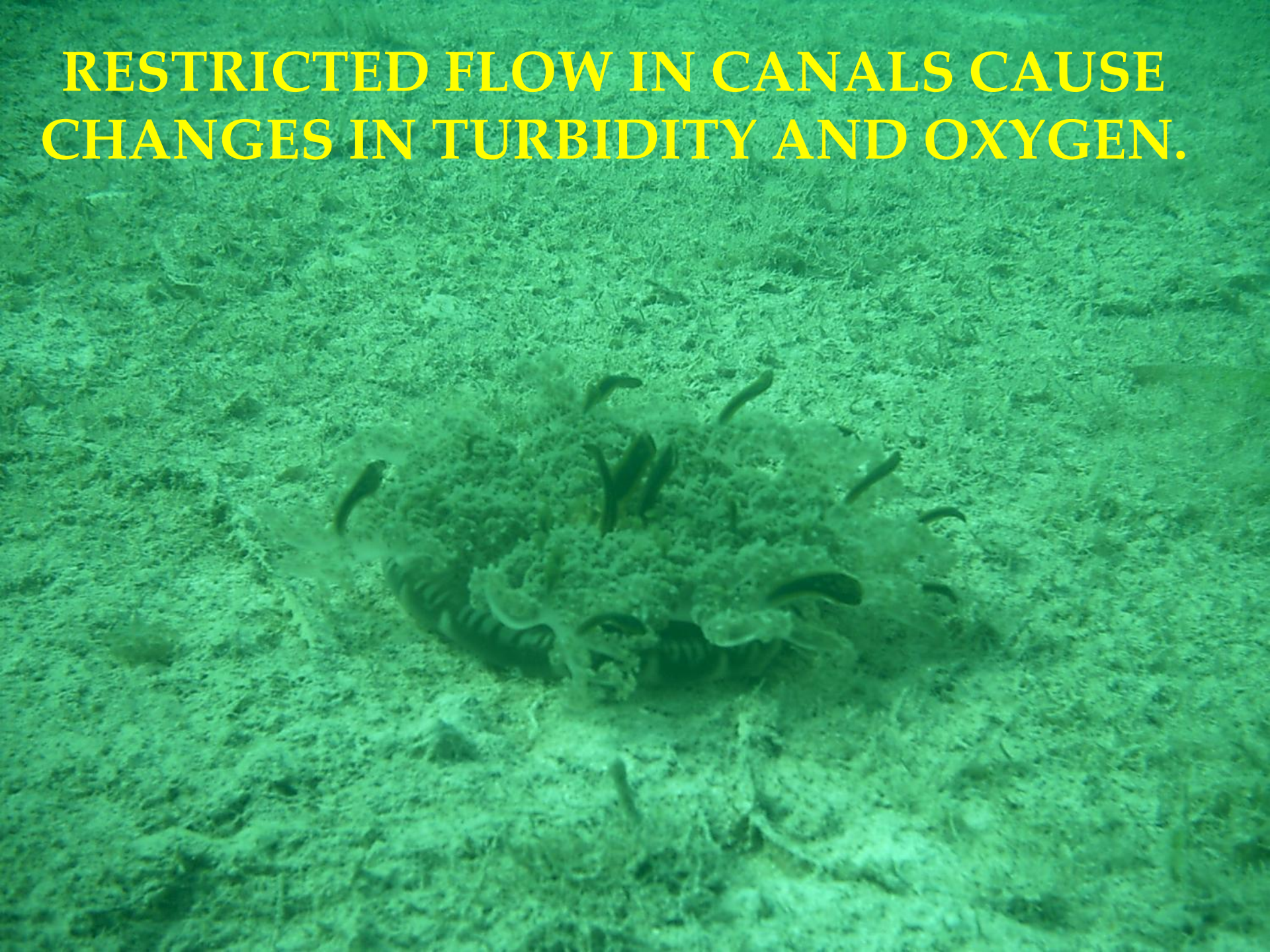


OLIGOTROPHY = “FEW FEEDING”

- LOW NUTRIENTS
- CLEAR WATER
- HIGH SOLAR IRRADIATION
- SEASONAL AND VARIABLE RAINFALL
- PRIMARY PRODUCTION LINKED TO THE SEA FLOOR IN SEAGRASSES AND ALGAE



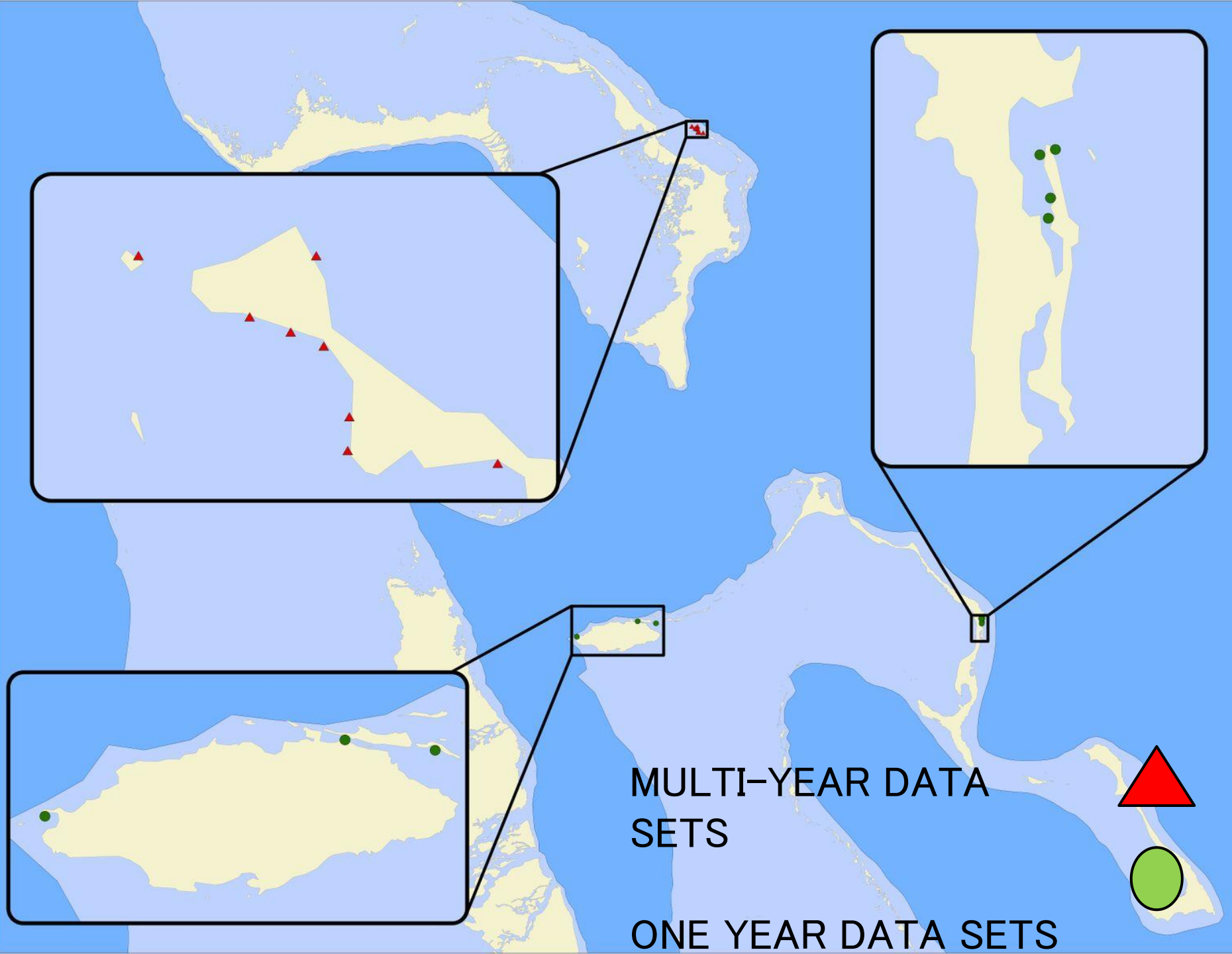
**RESTRICTED FLOW IN CANALS CAUSE
CHANGES IN TURBIDITY AND OXYGEN.**

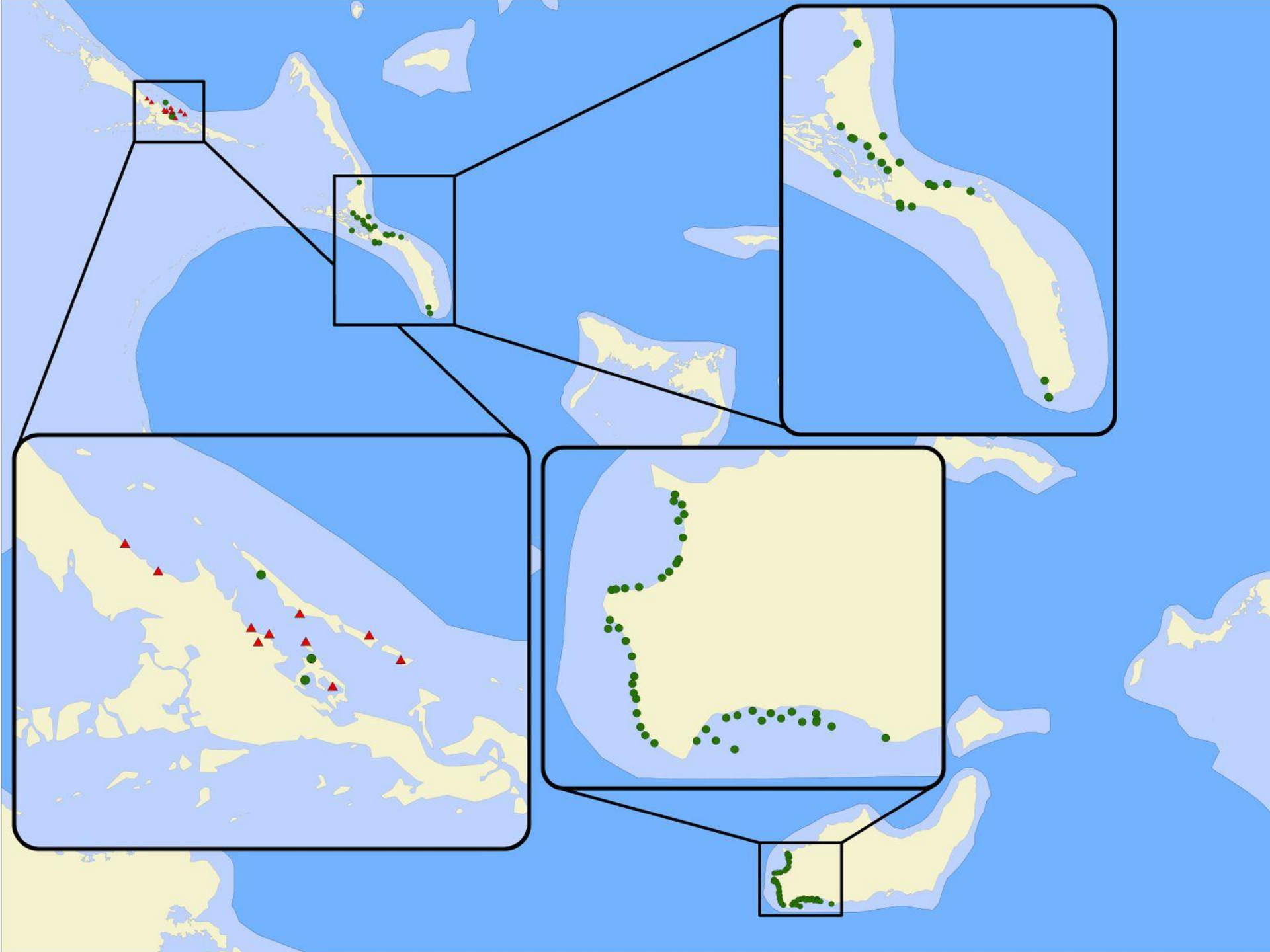




PHASE SHIFT

Irreversible changes to ecological communities that mean a loss of function and require mitigation/restoration



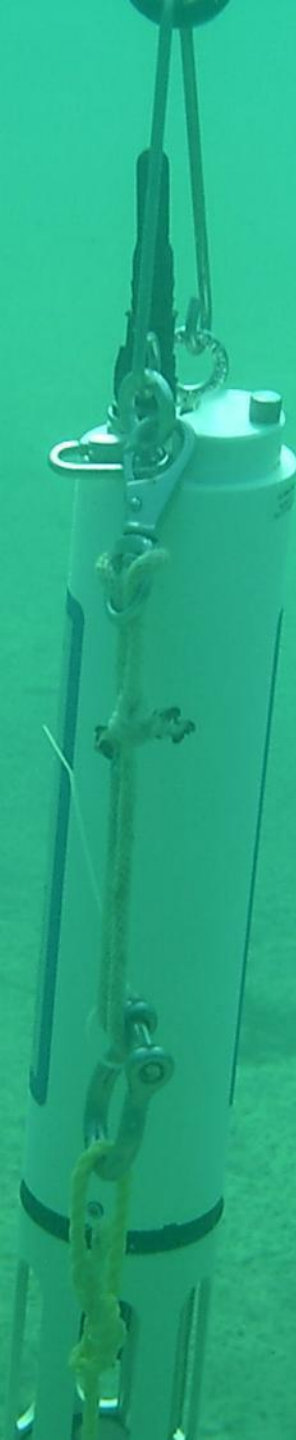


Water quality monitoring

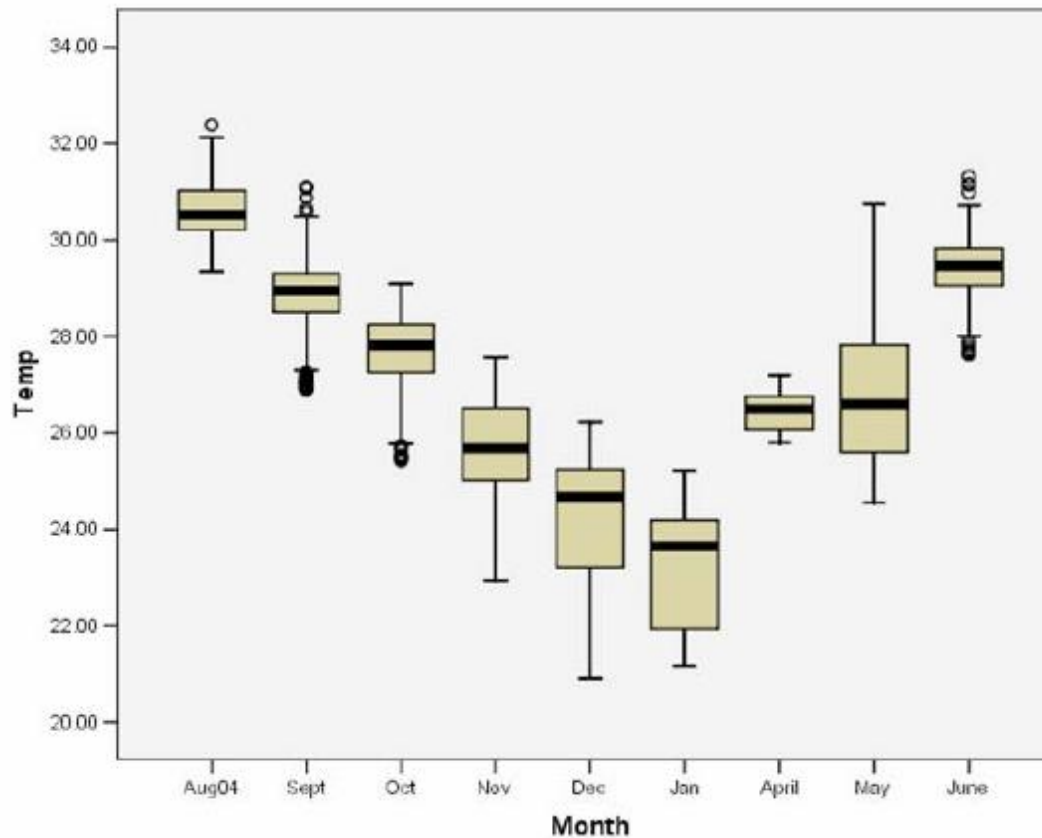
- Minimum of two weeks
- Sunrise. Sunset
- Wet and Dry seasons
- Multi-year study sites



Water Quality
Monitoring is
expensive and time
consuming.



BOX PLOTS USED TO REPRESENT PATTERNS OF VARIABILITY IN WATER QUALITY PARAMETERS



50% of all
values

MEDIAN

MAX and MIN
values minus
outliers (3SD)

An aerial photograph of a coastal area. A red polygon is drawn over the image, highlighting a specific region. The polygon is irregular, with vertices at approximately (270, 220), (510, 390), (400, 900), (0, 590), and (270, 220). The area inside the polygon is a mix of light blue and dark blue, indicating different underwater habitats. The surrounding area is a mix of light blue, dark blue, and green, indicating a variety of coastal environments. The text "COASTAL PLANT COMMUNITIES AND WILDLIFE HABITAT" is written in yellow, bold, sans-serif font in the upper right corner. The text "NEAR SHORE SEAGRASS, HARD BOTTOM AND PATCH REEF HABITATS" is written in white, bold, sans-serif font in the lower right corner.

*COASTAL PLANT
COMMUNITIES AND
WILDLIFE HABITAT*

*NEAR SHORE SEAGRASS,
HARD BOTTOM AND
PATCH REEF HABITATS*

PHYSICAL ALTERATION OF THE SHORELINE

DESTRUCTIVE USE OF THE COASTAL ZONE

BUILDINGS AND DEVELOPMENT

INVASIVE ALIEN SPECIES IN COASTAL ZONE

Dredging

Sand mining

Resorts and Homes

Australian pine

Ports and Marinas

Dumping

Roads

Hawaiian beach
cabbage



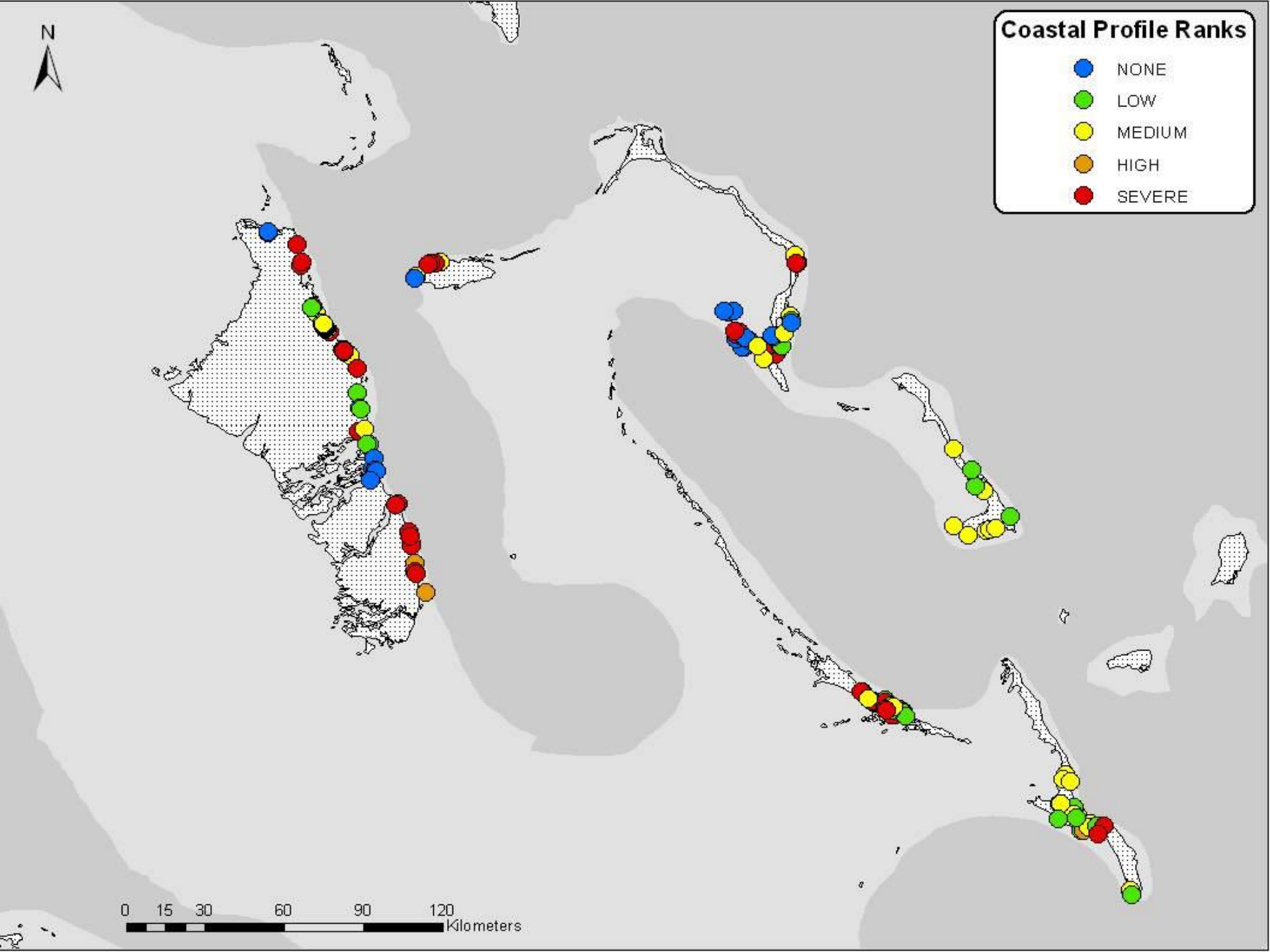
RANKING RISK OF EUTROPHICATION



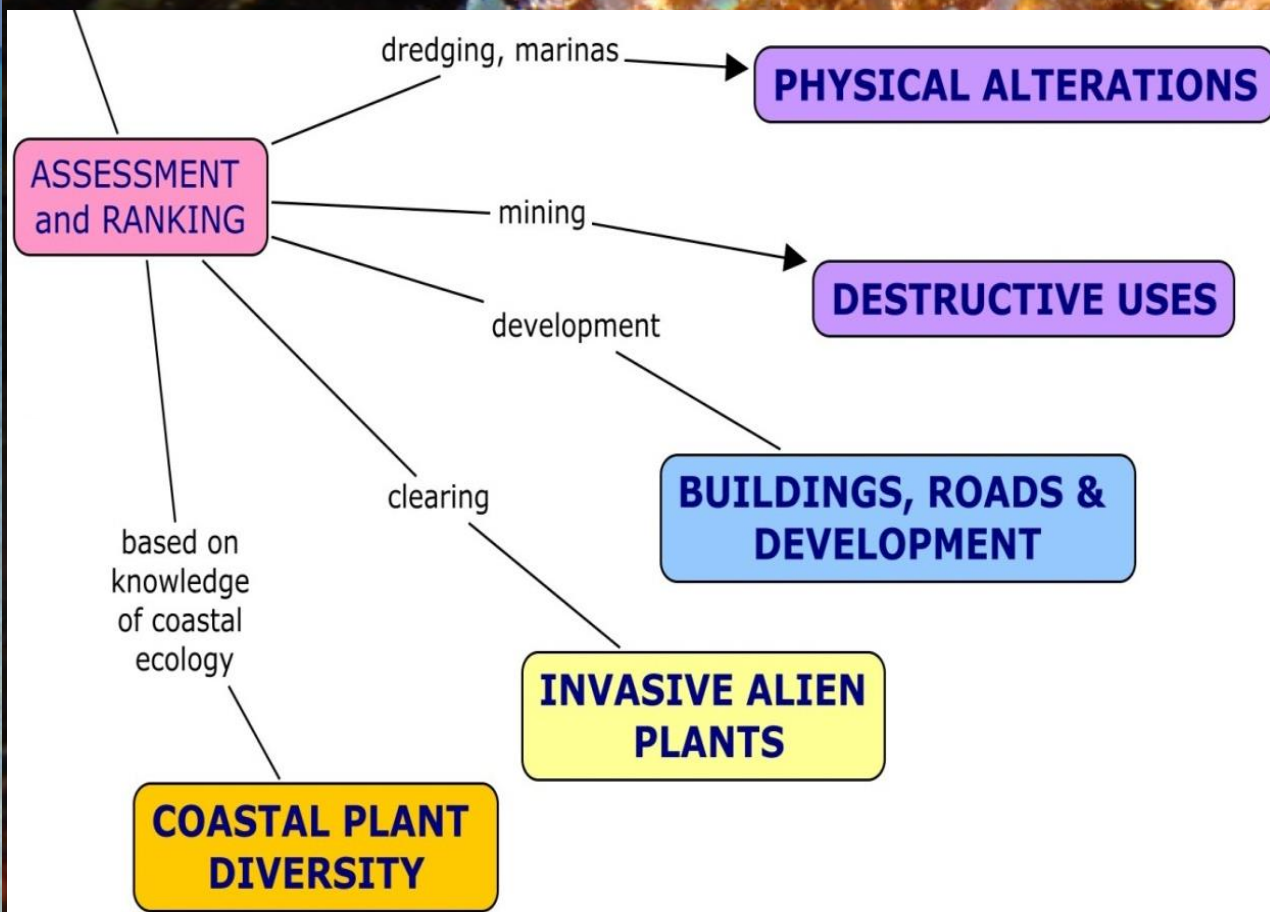
Coastal Profile Ranks

- NONE
- LOW
- MEDIUM
- HIGH
- SEVERE

0 15 30 60 90 120 Kilometers



WHAT IS THE HYPOXIA RISK?



**GLOBALY, EUTROPHICATION IS THE GREATEST
THREAT TO COASTAL ECOSYSTEM.**

